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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,764	03/19/2004	Mark Johnsgard	PA2704US	7692

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EXAMINER	
WU, IVES J	

ART UNIT	PAPER NUMBER
1724	

MAIL DATE	DELIVERY MODE
07/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/804,764	JOHNSGARD ET AL.	
	Examiner	Art Unit	
	Ives Wu	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/25/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23 and 25-27* is/are rejected.

7)☒ Claim(s) *24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/25/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

(1). Applicants' Amendments of claims and specification, Remarks filed on 05/14/2007, IDS filed on 06/25/2007 have been received.

Claims 4 and 17 are amended. Claim 27 is new.

The 112 2nd rejection of claims 20-25 in prior Office Action dated 2/12/2007 is withdrawn according to the Remarks of 05/14/2007.

The objection of Drawing is prior Office Action dated 2/12/2007 is withdrawn according to the Amendments of Specification of 05/14/2007.

The rejection of claims 1-3,15,17-26 in prior Office Action dated 02/12/2007 is withdrawn in response to the Remarks of 05/14/2007.

A new ground of rejection for claims 1-27 is presented below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(2). **Claims 1-7, 15-23** and **26-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnsgard (US04986838) in view of Han (US06090208A).

As to a scrubber interface device in fluid communication with the inlet manifold and configured to deliver the effluent gas stream from the inlet manifold to a gas scrubbing system in a scrubber inlet device in **independent claim 1**, Johnsgard (US04986838) discloses an inlet

system for scrubber (Title). An effluent gas scrubbing system is disclosed having improved scrubber inlet system including a transition tube having a fluted lower portion for directing particulate carrying gas into the mist saturated scrubbing chamber of a gas scrubber (Abstract, line 1-5). As shown in Figure 2 below, the scrubber inlet system 14 is in fluid communication with inlet pipe 18, and deliver the effluent gas stream from inlet 18 to a gas scrubbing system 12.

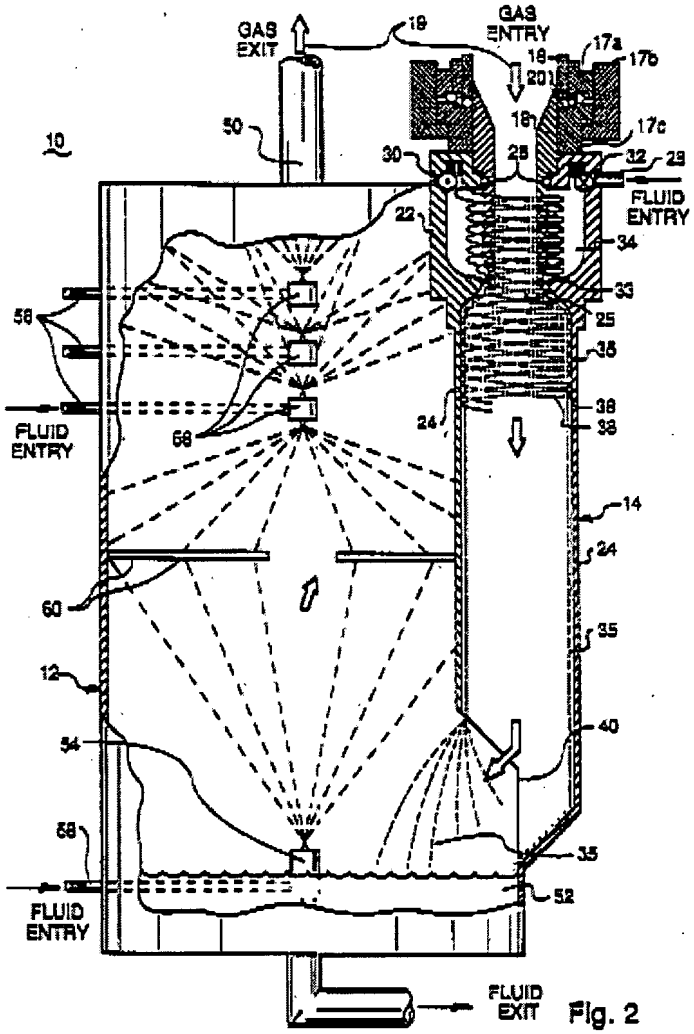

Fig. 2

As to a port configured to receive an effluent gas stream from an exhaust line in inlet manifold in **independent claim 1**, Johnsgard discloses gas entry 16 with inlet pipe 18 as shown in Figure 2 above.

As to a heated gas inlet configured to received a stream of heated gas in an inlet manifold in **independent claim 1**, Johnsgard **does not teach** such manifold including a heated gas inlet as claimed.

However, Han (US06090208A) **teaches** prevention of clogging in CVD apparatus (Title). As shown in the Figure 3 below, a hot gas inlet 34 in approximate to the outlet port of vacuum pump 11.

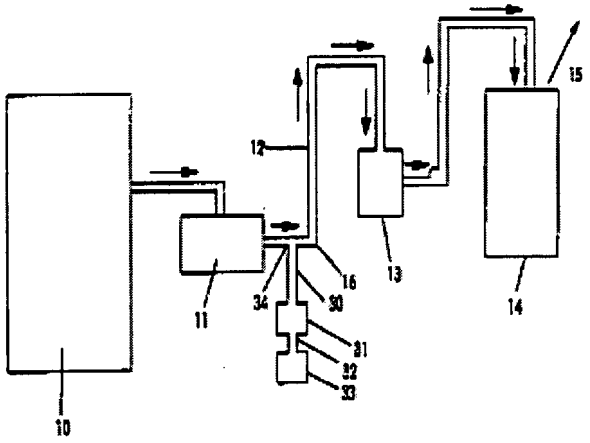

Fig. 3

The advantage of injecting a hot gas into the apparatus is to maintain the temperature of internal walls of the apparatus above the temperature at which condensation of the vapor occurs (Col. 3, line 32-35).

Therefore, it would have been obvious at time of the invention to install a hot gas inlet disclosed by Han near the gas entry 16 in the gas scrubber inlet system of Johnsgard in order to obtain the above-cited advantage.

As to port including an insulating insert sleeve in **claim 2,** insulation around an exterior in **claim 3**, it would be obvious to one of ordinary skills in the art to further prevent from the clogging of gas effluent by additional preventive means such as insulating insert sleeve and insulation around exterior to keep the gas effluent from cooling in the apparatus.

As to scrubber interface device including a lower portion having a generally cylindrical interior surface in **claim 4**, Johnsgard discloses scrubber inlet system 14 including a transition tube 24 in Figure 2 above.

As to an insulated insert portion providing fluid communication between the inlet manifold and the lower portion of the scrubber interface device in **claim 4**, Johnsgard does not discloses the insulated insert portion. However, it would have been obvious to one of ordinary skills in the art to use insulated insert portion as means to keep the gas effluent from clogging due to the heat loss anywhere in the lower portion of cylindrical interior surface.

As to scrubber interface device further including a system for providing a washing fluid to the cylindrical interior surface of the lower portion in **claim 5**, Johnsgard discloses the transition gas 33 to be formed so that as fluid 35 exiting the cavity 34, it maintains a high rotational velocity as it travels down the length of the transition tube 24 in the Figure 2 above.

As to insulated portion extending into the inlet manifold in **claim 6**, Johnsgard does not disclose the insulated insert portion extending to the inlet area, however, it would have been obvious to one of ordinary skills in the art at time of the invention to extend the insulated insert portion into the inlet area to provide maximum heat insulation to prevent from clogging by the condensation of gas effluent.

As to inlet manifold to be separable from scrubber interface device in **claim 7**, Johnsgard discloses the inlet of gas entry 16 being glued to a 1st threaded union 17a, which is in turn threadably engaged to the union nut 17b. Union nut 17b is then threadably engaged to a 2nd thread union 17c, which is glued to inlet pipe 18 (Col. 4, line 39-43). Inlet pipe 18 maybe readily removed by unthreading the union nut 17b from supply pipe 16 and removing the inlet pipe 18 (Col. 6, line 1-4).

As to source of heated gas configured to provide the stream of heated gas to the heated gas inlet in **claim 15**, Han (US06090208) discloses source of gas 33 in the Figure 3 above.

As to heated gas providing an inert gas in **claim 16**, inert gas to be N_2 in **claim 17**, Han discloses, in an embodiment, the gas source comprises a source of dried air, nitrogen or an inert gas, preferably dried air or nitrogen (Col. 4, line 63-65).

As to the temperature regulation system for the hot gas in **claim 18**,temperature sensor, controller to regulate the temperature of heated gas according to a signal from the sensor in

claim 19, Han discloses the temperature of hot gas at temperature of about 20 °C to about 260 °C, preferably 40 °C to about 90 °C (Col. 6, line 7-8). Therefore, it would have been obvious to have temperature regulation system to control the temperature ranged from 40 °C to 90 °C preferably, in order to effectively prevent or substantially reduce the condensation in the gas effluent. It would be obvious also to one of ordinary skills in the art to have temperature sensor and controller in temperature regulation in order to regulate the temperature of the hot gas because it is well known in the art that the controlling function requires an input of controlled parameter from measuring device such as sensor and controlling device such as controller.

As to step of receiving effluent gas stream into manifold in a method for delivering an effluent gas stream into a gas scrubbing system in **independent claim 20**, Johnsgard discloses inlet pipe 18 to receive the effluent gas in Figure 2 above.

As to step of heating interior surface of the manifold to near a condensation temperature of the effluent gas in a method in **independent claim 20**, Johnsgard (US04986838) **does not teach** step of heating the surface of the manifold as claimed.

However, Han (US06090208) **teaches** the hot gas to be capable of maintaining the internal walls of effluent line below the condensation temperature of the condensable gaseous species (Col. 5, line 49-52).

The advantage of heating the surface of effluent line is to prevent the condensation of condensable effluent gas, which causes plugging problem (Col. 4, line 58-62).

Therefore, it would have been obvious at time of the invention to include step of heating the internal surface of manifold disclosed by Han in the gas scrubber inlet system of Johnsgard in order to obtain the above-cited advantage.

As to step of providing effluent gas stream to an interface device that is effective to suppress nucleation of condensation from effluent gas stream, and configured to direct effluent gas stream into gas scrubbing system in **independent claim 20**, Johnsgard discloses the inlet system for gas scrubber including the inlet system 14 as shown in Figure 2 above. BY swirling or spinning the fluid in the transition tube, the internal walls of the transition tube may be completely coated with a washing flow of fluid and continuously flushed so as to prevent SiO_2 buildup (Col. 5, line 15-19). The nterface opening 40 allows gas to pass rom the transition tube

to the initial scrubbing chamber without creating unflushed surfaces in the transition tube or the scrubbing chamber (Col. 6, line 27-32).

As to condensation temperature of aluminum chloride in **claim 21,** Han discloses temperature of condensable species, such as WOF_4 (Col. 5, line 49-52). It would have been obvious to have condensable temperature for aluminum chloride once the effluent is for aluminum chloride.

As to heating interior surfaces of manifold including flowing a heated gas stream into the manifold in **claim 22**, Han discloses the flowing of heated gas into effluent gas as shown in Figure 3 above.

As to pass the effluent gas stream through an abrupt hot-to-cold transition region in order to suppress condensation in **claim 23**, Johnsgard discloses the transition tube 24, the abrupt dry-to-wet transition minimizing the formation of stagnant wet surfaces on which SiO_2 may collect and the smoothness of that transition reduces the extent of gas turbulence, which can cause fluid mist to be carried back into the dry inlet pipe 18. The dry pipe includes the hot gas heating and inlet system includes spray of water, dry-to-wet transition reads on hot-to-cold transition on instant claim.

As to inlet manifold including a port configured to receive an effluent gas stream from exhaust line and a scrubber interface device in fluid communication with the inlet manifold to a gas scrubbing system in a scrubber inlet device in **independent claim 26**, the disclosure of Johnsgard, Han is incorporated herein by reference, the most subject matters as claimed, have been recited in applicants' claim 1 and have been discussed therein.

As to the effluent gas stream at a 1st temperature and means for maintaining the effluent gas stream at or near the 1st temperature in **independent claim 26**, the disclosure Han is incorporated herein by reference, the most subject matters as currently claimed has been recited in applicants claims1 and 20 and have been discussed therein.

As to the insulated insert portion in scrubber inlet device in **claim 27**, the disclosure of Johnsgard, Han is incorporated herein by reference, the most subject matter as currently claimed, has been recited in applicants' claim 4, and has been discussed therein.

(3). **Claims 8-14** and **25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnsgard (US04986838) in view of Han (US06090208A), further in view of Kennedy et al (US05927957A), evidenced by Lane et al (US05846275).

As to inlet manifold including a plunger for clearing the scrubber interface device in **claims 8** and **25**, plunger including a perforated plunger head in **claim 9**, Johnsgard, Han **do not teach** the use of plunger as claimed.

However, Kennedy et al (US05927957A) **teach** plunger device with holes on the head as shown in Figures 13 and 14 below.

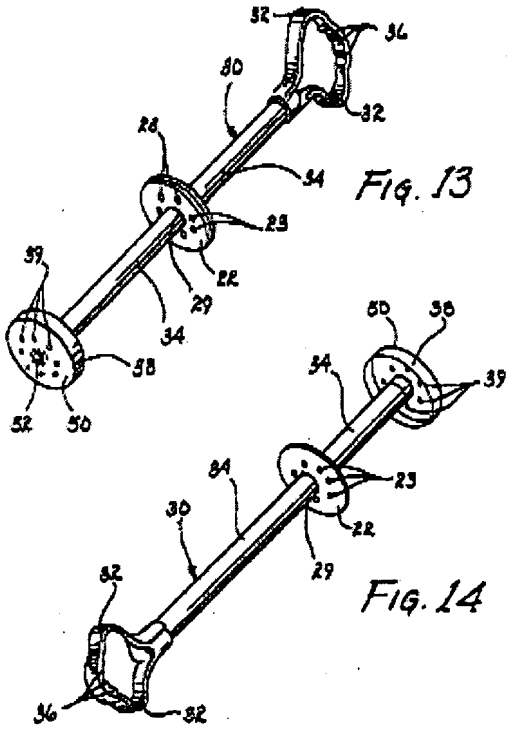

Fig. 13

Fig. 14

The advantage of use plunger device is for cleaning out clogged drains or pipes (Col. 1, line 12). Also evidenced by Lane et al (US05846275A) that use of scraper or plunger devices for cleaning fluid treatment systems (Col. 9, line 23-27).

Therefore, it would have been obvious at time of the invention to install a plunger of Kennedy et al in the inlet system of Johnsgard in order to obtain the above-cited advantage.

As to perforated plunger head allowing effluent gas stream to flow through scrubber interface device whenever the plunger head to be disposed therein in **claim 9**, in view of the

substantially identical design of the plunger head of Kennedy et al, it would allow the effluent gas stream flow through.

As to insulated insert portion in the scrubber interface device in **claim 10**, the disclosure of Johnsgard, Han is incorporated herein by reference, the most subject matter as currently claimed, has been recited in applicants' claim 4, and has been discussed therein.

As to insulated portion having a minimum diameter for providing fluid communication to the inlet manifold and plunger head having a mximum diameter less than the minimum diameter of insulated insert portion in **claim 10**, it would have been obvious to one of ordinary skills in the art at time of invention to have minimum diameter for the insulated insert portion in order to efficiently optimize the performance of scrubber inlet system for the determined operational conditions. "Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimension are critical". In re Woodruff 16 USPQ2d 1934 (Fed. Cir. 1990). It also would be obvious that plunger head has a maximum diameter less than minimum diameter of insulated insert portion in order to clear most clogs on the wall of insulated insert portion.

As to tapered portion in insulated insert portion in **claim 11**, it would be obvious for changes in shapes, but does not effect functions. *In re Dailey*, 357 F.2d 669, 149 USPQ47 (CCPA 1966).

As to recess portion to retract the plunger when it is not used in **claim 12,** it would be obvious to have a recess portion to accommodate the plunger in the inlet system of Johnsgard in order to integrate the function of plunger well with the rest of the system.

As to the recess portion having a heated gas inlet in **claim 13**, to distribute the stream of heated gas from the heated gas inlet in **claim 14**, it would be obvious to have heated gas inlet in the recess portion to distribute the heated stream because rearrangement of parts renders obvious. *In re Kuhle*, 526 F.2d 553, 188 USPQ7 (CCPA 1975).

Allowable Subject Matter

(4). **Claim 24** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims 1 and 20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ives Wu whose telephone number is 571-272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu
Art Unit: 1724
Date: July 3, 2007

DUANE SMITH
PRIMARY EXAMINER

7-5-07